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## **Review: Ecological Consequences of Artificial Night Lighting**

Catherine Rich and Travis Longcore (Eds.)

Reviewed by [Kathy Piselli](#)

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Catherine Rich and Travis Loncore (Eds.). *Ecological Consequences of Artificial Night*. Washington, DC: Island Press, 2006. ISBN: 1-55963-129-5. \$29.95 (Trade paper). ISBN: 1-55963-128-7 \$65.00 (Trade cloth).

The Urban Wildlands Group, a Los Angeles-based conservation organization, convened a gathering of ecologists in 2002 to review the state of knowledge about the ecological consequences of artificial night lighting. This book provides edited proceedings from that conference.

When New York City's Pearl Street Station opened in 1882, the age of modern urban lighting was ushered in. Coincidentally, this was also a time when large optical refracting telescopes were built. By the 1950s, astronomers were complaining that "sky glow" from city lights were keeping them from doing their work. Sky glow happens when lights from urban areas reflect off clouds, causing light from even a small urban area to obliterate much of what there is to see in the night sky. The effect was most problematic in the western United States, location of several large telescope facilities and the traditional home of big, starry skies.

By 2002, nine U.S. states and one entire country - the Czech Republic - had adopted so-called "dark sky" provisions, and 11 other states were considering similar laws. These legal efforts were based on aesthetic concerns. Some statistics frequently quoted came out of the First World Atlas of the Artificial Night-Sky Brightness (2001): half of the world's population has never seen the Milky Way, 40 percent of Americans no longer have to adjust their eyes to night vision, two thirds of the world's population lives under light-polluted night skies. In March 2006, the National Park Service's Night Sky Team released comprehensive data on the amount of light in the night sky in national parks, finding pollution in places that once seemed distant from urban centers.

But to paraphrase one of this book's editors, the idea that light pollution might pose a broad problem for whole ecosystems remained mostly in the gray literature. The topic is relatively new and unstudied and does not even have proper terminology yet. Lighting professionals and environmental regulators speak of "lux" to communicate a quantity of visible light. But for ecological purposes, "lux" fails to express the fact that different light sources

have different effects upon species.

The book's main sections cover mammals, birds, reptiles and amphibians, fishes, invertebrates, plus one article on plants, written by some of the key researchers in the field. Well-referenced and illustrated scientific articles are interspersed with poetic pieces by nature writers. Though the language is scientific, the editors' choices for layout (relatively short paragraphs, a "conclusion" section for each, and frequent illustrations) help make the reading accessible to educated readers. All articles usefully suggest topics and methods for further research, both basic and applied.

Trees that fail to show fall colors, or moths that become bat food aren't necessarily going to catalyze public opinion against light pollution. But consider that what affects one group of organisms may affect others as well. The discussion of the effect of night lighting on road kill is a meeting of human, animal and ecological concerns. And it is not possible to read the section discussing the disruption of circadian rhythms in mammals dispassionately. As it turns out, there is now compelling evidence that artificial night lighting plays a role in the fivefold rate of breast cancer risk seen in industrialized societies, and researchers are examining other cancers as well.

The editors urge the incorporation of ecological concerns about artificial night lighting into existing environmental laws and monitoring. If not, conservation efforts may be wasted. Further research should be undertaken as soon as possible, as they point out, because reference, or unpolluted, sites are fast lighting up.

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